

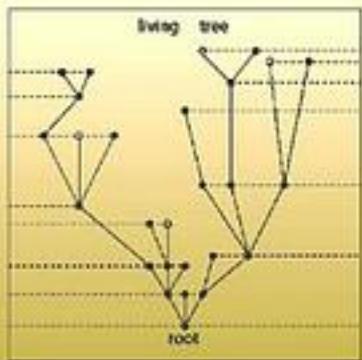
# Neutron Fluctuations

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# Neutron Fluctuations

A TREATISE ON THE PHYSICS OF BRANCHING PROCESSES



IMRE PÁZSIT AND LENÁRD PÁL

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The transport of neutrons in a multiplying system is an area of branching processes with a clear formalism. This book presents an account of the mathematical tools used in describing branching processes, which are then used to derive a large number of

properties of the neutron distribution in multiplying systems with or without an external source. In the second part of the book, the theory is applied to the description of the neutron fluctuations in nuclear reactor cores as well as in small samples of fissile material. The question of how to extract information about the system under study is discussed. In particular, the measurement of the reactivity of subcritical cores, driven with various Poisson and non-Poisson (pulsed) sources, and the identification of fissile material samples, is illustrated. The book gives pragmatic information for those planning and executing and evaluating experiments on such systems. It gives a complete treatise of the mathematics of branching particle processes, and in particular neutron fluctuations, in a self-contained manner. It is the first monograph containing the theory and application of neutron fluctuations in low power ADS (spallation and pulsed sources). It is suitable as a tutorial and handbook/reference book for scientists and graduate students. One of the authors is the founder of the mathematical theory of neutron fluctuations in zero power systems.

作者介绍:

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